

1587P - SARS-CoV-2 infection risk and COVID-19 prevalence in cancer patients during the first wave of COVID-19 pandemic in a Northern Italy's virus epicenter area

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Background

Patients with cancer are purported to be more vulnerable to coronavirus disease 2019 (COVID-19). However, cancer encompasses a spectrum of heterogeneous tumor subtypes. The aim of this study was to investigate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection risk and COVID-19 prevalence according to tumor subtype in the resident cancer patient population of the Province of Parma (Emilia Romagna Region, Northern Italy) during the *first wave* of COVID-19 pandemic in Italy.

Methods

We analyzed data from the Parma Province Cancer Registry, COVID-19 hospital medical records, and local surveillance system of all laboratory-confirmed cases tested positive for SARS-CoV-2 from the beginning of the outbreak (20th of February) to the 19th of July 2020. All the Parma resident population of cancer patients was classified as either "active" or "inactive" according to the evidence of any referral to health services, for any reason, during the observation period. Study analyses were adjusted for patient demographics, tumor subtype and period of cancer diagnosis.

Conclusions

In our study, patients with cancer were more susceptible to SARS-CoV-2 infection. The cumulative incidence of COVID-19 was higher in active vs. inactive cancer subjects. However, cancer is a heterogeneous group of diseases and patients with different tumor types had differing susceptibility to COVID-19 phenotypes.

Results

40,148 cancer patients (mean age 68 years; 57.8% females; 45.1% active) were analyzed. The cumulative risk of SARS-CoV-2 infection was 11.2% for cancer patients vs. 7% for non-cancer subjects ($P < 0.0001$). The overall COVID-19 attack rate was 2.2% (95% CI, 2.0-2.4) and 2.6% (95% CI, 2.4-2.9) for inactive and active cancer patients, respectively. The cumulative incidence of COVID-19 was higher in active vs. inactive cancer subjects (HR 1.18, $P = 0.01$). In the active cancer group, the cumulative incidence of COVID-19 was higher in lung cancer patients vs. other tumor subtypes (HR 4.3). In the same group, HR for breast cancer patients was 0.86. Interestingly, the subgroup analysis of COVID-19 cumulative incidence showed a significant interaction between active patient status and hematological malignancies.

Study Population	N = 40,148 (%)
Sex	
Female / Male	23,192 (58)/16,956 (42)
Age	
Mean	68 yrs
Any referral to health services during the observation period	
Yes (active) / No (inactive)	18,103 (45)/22,045 (55)
Most common cancers	
Breast cancer	6,844 (17)
Skin cancer (non-melanoma)	5,951 (15)
Skin cancer (melanoma)	3,235 (8)
Prostate cancer	3,155 (8)
Colorectal cancer	2,843 (7)
Thyroid cancer	1,916 (5)
Bladder cancer	1,590 (4)
Lymphoma	1,427 (4)
Endometrial cancer	1037 (3)
Kidney cancer	980 (2)
Lung cancer	677 (2)
Leukemia	401 (1)
Pancreatic cancer	155 (0.4)

Table 1. Cumulative risk of SARS-CoV-2 infection by cancer diagnosis and active/inactive status.

	SARS-CoV-2 positive N (%)	SARS-CoV-2 negative N (%)	Total evaluated N (%)	P
Cancer patients (active status)	310 (10)	2721 (90)	3031 (100)	< 0.0001
Cancer patients (inactive status)	387 (12)	2835 (88)	3222 (100)	
Non-cancer patients	2332 (7)	31118 (93)	33450 (100)	

Figure 2. Temporal trends in cumulative incidence rates of COVID-19 by cancer diagnosis (yes vs. no) and active vs. inactive status.

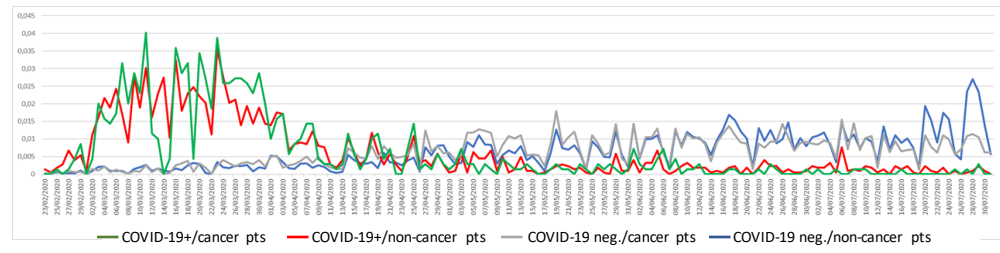


Figure 1. Cumulative incidence of COVID-19 in cancer patients by active vs inactive status

